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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/904,232	07/12/2001	David Neal Weise	M61.12-0348	2123

7590 03/09/2005

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EXAMINER

HAN, QI

ART UNIT PAPER NUMBER

2654

DATE MAILED: 03/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/904,232

Applicant(s)

WEISE, DAVID NEAL

Examiner

Qi Han

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☒ Claim(s) 24 and 25 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 07/12/2001.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Information Disclosure Statement

1. The references listed in the Information Disclosure Statement submitted on 07/12/2001 have been considered by the examiner (see attached PTO-1449).

Drawings

2. The drawings Figs 1-3 and 4a-4b. are objected to because the Office prefers using --Prior Art--, instead of "Background" for the well-known teachings in the drawings. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schabes et al. (US 5,799,269) hereinafter referenced as Schabes, in view of Richardson et al. (US 5,999,896) hereinafter referenced as Richardson.

As per **claim 19**, Schabes discloses system of correcting grammar based on parts of speech probability (title), comprising:

an alternative generator configured to receive an input string of text, and in response, to generate alternative strings of text corresponding to different possible grammatical corrections of the input string of text, (Fig. 2A and column 5, lines 57-58, 'input sentence 10 entered by a keyboard 12'(text string); column 9, lines 6-7, 'all possible alternative sentences S2 to the sentence S1 are generated'; column 8, lines 13-14, 'statistical approach assigns high probability to grammatically correct sentences');

a stochastic score generator configured to receive the sentence for the input string of text and for each of the alternative strings of text and to generate [separate] parse scores for each of the strings of text from the corresponding sentence (column 8, lines 13-14, 'statistical (stochastic) approach assigns high probability (score) to grammatically correct sentences'; Fig. 2A and column 8, line 64 to column 9, line 10; 'breaks up sentence S1 into the most likely part of speech sequence T1 (also interpreted as input string of text) and its probability P1 (score)';

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‘produce the most likely art-of-speech sequence T2 (for alternative sentences S2)...and its probability P2 (scores)’);

a string selector configured to determine which string of text, out of the input string of text and the alternative strings of text, has a greatest parse score and to select the string of text having the highest parse score, (column 9, lines 12, ‘having derived the probabilities... determine which part of speech sequence is the most likely to be correct’, ‘determine the appropriate sentence to be selected’ by using that ‘P2 is compared to P1...’, which suggests taking highest probability).

Schabes does not expressly disclose “a parse tree producer configured to generate parse trees for the input string of text and for each of the alternative strings of text” and “generate **separate** parse scores for **each strings** of text from corresponding parse tree”. However, this feature is well known in the art as evidenced by Richardson who discloses method and system for identifying and resolving commonly confused word sin a natural language parser (title), comprising ‘a parser tree representing an input text segment (input string of text) and intermediate parsing results (alternative strings of text)’ (column 3, lines 48-49), and teaches that ‘these probabilities (score)...are preferably generated by statistically analyzing the appearance of each part-of-speech (pos) record in completed parse tree’ (column 8, lines 35-38), wherein each pos has a separate probability (score) (see Fig. 13, in ‘probability list’). Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Schabes for providing parse trees for analyzing the input and alternative part-of speech and using the corresponding separate probabilities, as taught by Richardson, for the purpose of better

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identifying and solving commonly confused words in a natural language parser (Richardson: column 2, lines 66-67).

As per **claim 20** (depending on claim 19), Schabes in view Richardson further discloses “generate the separate parse scores for each of the strings of text by generating a separate statistical goodness measure for each of the strings of text using the corresponding parse tree”, (Schabes: Fig. 2A, blocks 38 and 40; Richardson: Fig. 12, block 1370 ‘probability list’).

As per **claim 21** (depending on claim 20), Schabes in view Richardson further discloses “the statistical goodness measure for each of the parse trees is an indicator of a likelihood that the particular parse tree represents the intended meaning of a human originating the text corresponding to the input string of text”, (Richardson: abstract, ‘parse tree containing a possible part of speech for the possibly intended word is produced’; column 8, lines 59-60, ‘probability (statistical goodness measure) of part-of-speech records for possible intended words (intended meaning of a human originating the text)’).

As per **claim 22** (depending on claim 21), Schabes in view Richardson further discloses “generate the separate statistical goodness measure for each of the strings of text as functions of probabilities determined using a training corpus”, (Schabes: column 9, lines 54-57, ‘the geometric average (function) of these probabilities’; column 8, lines, ‘the statistical is obtained by training on a collection of English sentences, or a training corpus’).

As per **claim 23** (depending on claim 22), Schabes in view Richardson further discloses: “combining probabilities of each node in the corresponding parse tree”, (column 8, lines 35-38: ‘these probabilities (score)...are preferably generated by statistically analyzing the appearance of each part-of-speech (pos) record in completed parse tree (include each note)’),

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“wherein the probabilities of each node are determined by the steps comprising: receiving language-usage probabilities based upon appearances of instances of combinations of linguistic features within the training corpus; and calculating the probabilities of each node based upon linguistic features of each node and the language-usage probabilities”, (Richardson: column 8, lines 35-38: ‘these probabilities ... generated by statistically analyzing the appearance of each part-of-speech (pos) record in completed parse tree for a representative corpus (training corpus) of input text segments’; Schabes: column 9, lines 54-57, ‘the geometric average (statistical goodness measure) of these probabilities by taking into account their word lengths (corresponding to linguistic feature)’).

Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to combine above teachings of Schabes and Richardson for providing a statistical goodness measure reflecting usage probabilities based on appearances of pos and linguistic features for each node in the corresponding parse tree, for the purpose of better identifying and solving commonly confused words in a natural language parser (Richardson: column 2, lines 66-67).

As per **claim 1**, it recites a method. The rejection is based on the same reason as described for apparatus claim 19, because the claim recites same or similar limitation(s) as claim 19 (see above).

As per **claim 2** (depending on claim 1), the rejection is based on the same reason as described for claim 20, because the claim recites same or similar limitation(s) as claim 20 (see above).

As per **claim 3** (depending on claim 2), Schabes in view Richardson further discloses “recommending to a user the selected one string of text which has the highest stochastic parse score”, (Schabes: column 9, lines 15-17, ‘if $P2-P1$ is greater than some threshold e (herein choose $e=0$)... $S2$ is suggested (recommended)’; Richardson: Fig. 7, ‘suggestion’).

As per **claim 4** (depending on claim 3), Schabes in view Richardson further discloses “if the selected one string of text is the input string of text, then recommending to the user the selected one string of text further comprises not recommending a grammar correction for the input string of text”, (Schabes: column 15-17, ‘if $P2-P1 \leq e$ (herein choose $e=0$)... then no change is suggested (recommended)’).

As per **claim 5** (depending on claim 1), the rejection is based on the same reason as described for combination of claim 20 and second element of claim 1, because the claim recites same or similar limitation(s) as claim 20 and second element of claim 1 (see above).

As per **claim 6** (depending on claim 5), the rejection is based on the same reason as described for claim 20, because the claim recites same or similar limitation(s) as claim 20 (see above).

As per **claim 7** (depending on claim 6), the rejection is based on the same reason as described for claim 21, because the claim recites same or similar limitation(s) as claim 21 (see above).

As per **claim 9** (depending on claim 5), the rejection is based on the same reason as described for claim 22, because the claim recites same or similar limitation(s) as claim 22 (see above).

As per **claims 10-18**, they recite computer-readable medium having computer executable instructions. The rejection is based on the same reason as described for method claims 1-9, respectively, because the claims recite same or similar limitation(s) as claims 1-9, respectively.

Allowable Subject Matter

4. Claims 24-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowable subject matter(s):

Regarding **claim 24** (depending on claim 21), the instant application is directed to a grammar checking system for an input text. This dependent claim, combining all limitation of its parent(s), identifies the uniquely distinct features of having a grammar checker including the alternative generator and the string selector, the grammar checker further comprising:

string storage coupled to the alternative generator and to the stochastic score generator, and configured to store the input string of text and each of the alternative strings of text, and configured to store the statistical goodness measure generated for each string of text; and

a parser coupled to the string storage and to the parse tree producer, and configured to call the parse tree producer and the stochastic score generator in order to produce a parse tree and a statistical goodness measure for each string of text.

Regarding **claim 25**, it depends on claim 24, so that it inherits all limitations of its parent claim(s).

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The prior art of record, Schabes et al. (US 5,799,269), Richardson et al. (US 5,999,896) and Karaorman et al. (US 6,631,346 B1), providing numerous teachings of alternative techniques and approaches for grammar checking and text parsing, including using parse tree, probability of appearance of part-of-speech (pos) in training corpus, and alternative pos list. However, the combined features as stated above, are not anticipated by, nor made obvious over the prior art of the record.

Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qi Han whose telephone numbers is (703) 305-5631. The examiner can normally be reached on Monday through Thursday from 9:00 a.m. to 7:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil, can be reached on (703) 305-6954.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Inquiries regarding the status of submissions relating to an application or questions on the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028 between the hours of 6 a.m. and midnight Monday through Friday EST, or by e-mail at: ebc@uspto.gov. For general information about the PAIR system, see <http://pair-direct.uspto.gov>.

QH/qh

February 15, 2005


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